exposing a reaction volume of gases above the substrate surface to a high intensity light source to increase the functional atomic oxygen concentration and reduce the fixed charge in the deposited films.

31. (Twice amended) A method of depositing a silicon dioxide layer on a substrate surface, comprising:

contacting the substrate surface with a reaction volume of gas comprising a SiO_2 precursor and ozone;

heating the substrate surface to a temperature of [about] at least 480°C to about 700°C; and

illuminating the reaction volume of gas from a light source without directly exposing the substrate surface to the light source to increase the functional atomic oxygen concentration and reduce the fixed charge in the deposited films.

42. (Twice amended) A method of depositing a doped silicon dioxide layer on a substrate surface, comprising:

contacting the substrate surface with a reaction volume of gas comprising a SiO_2 precursor, ozone and at least one dopant source;

heating the substrate surface to a temperature of [about] at least 480°C to about 700°C; and

illuminating the reaction volume of gas from a light source without directly exposing the substrate surface to the light source to increase the functional atomic oxygen concentration and reduce the fixed charge in the deposited films.

43. (Once amended) A method of depositing a doped silicon dioxide layer on a substrate surface, comprising:

contacting the substrate surface with a reaction volume of gas comprising a SiO_2 precursor, ozone and at least two dopant sources; [and]

heating the substrate surface to a temperature of at least 480°C to about 700°C; and

illuminating the reaction volume of gas from a light source to increase the functional atomic oxygen concentration and reduce the fixed charge in the deposited films.

45. (Once amended) A method of depositing a borophosphosilicate glass layer on a substrate surface, comprising:

heating the substrate surface to a temperature of at least 480°C to about 700°C;

contacting the substrate surface with a reaction volume of gas, wherein the reaction volume of gas comprises:

a SiO_2 precursor selected from the group consisting of TEOS (tetraethylorthosilicate), TMCTS (tetramethylcyclotetrasiloxane), DES (diethylsilane), DTBS (ditertiarybutylsilane) and TMOS (tetramethylorthosilicate);

a dopant source for boron selected from the group consisting of triisopropylborate, TMB (trimethylborate), and TEB (triethylborate); and

a dopant source for phosphorus selected from the group consisting of TEPo (triethylphosphate), TEPi (triethylphosphite), TMPo (trimethylphosphate) and TMPi (trimethylphosphite); and

illuminating the reaction volume of gas from a high intensity light source to increase the functional atomic oxygen concentration and reduce the fixed charge in the deposited films.

46. (Once amended) A method of depositing a fluorosilicate glass layer on a substrate surface, comprising:
heating the substrate surface to a temperature of at least 480°C to about 700°C;
contacting the substrate surface with a reaction volume of gas comprising a fluorinated SiO_2 precursor and ozone; and
illuminating the reaction volume of gas from a light source to increase the functional atomic oxygen concentration and reduce the fixed charge in the deposited films.

47. (Once amended) A method of depositing a doped fluorosilicate glass layer on a substrate surface, comprising:
heating the substrate surface to a temperature of at least 480°C to about 700°C;
contacting the substrate surface with a reaction volume of gas comprising a fluorinated SiO_2 precursor, ozone and at least one dopant source; and
illuminating the reaction volume of gas from a light source to increase the functional atomic oxygen concentration and reduce the fixed charge in the deposited films.

48. (Once amended) A method of depositing a doped fluorosilicate glass layer on a substrate surface, comprising:
heating the substrate surface to a temperature of at least 480°C to about 700°C;
contacting the substrate surface with a reaction volume of gas comprising a fluorinated SiO_2 precursor, ozone and at least two dopant sources; and
illuminating the reaction volume of gas from a high-intensity light source to increase the functional atomic oxygen concentration and reduce the fixed charge in the deposited films.

50. (Once amended) A method of depositing a fluoroborophosphosilicate glass layer on a substrate surface, comprising:

heating the substrate surface to a temperature of at least 480°C to about 700°C;

contacting the substrate surface with a reaction volume of gas, wherein the reaction volume of gas comprises:

a SiO_2 precursor comprising FTES (fluorotriethoxysilane);

a dopant source for boron selected from the group consisting of triisopropylborate, TMB (trimethylborate), and TEB (triethylborate); and

a dopant source for phosphorus selected from the group consisting of TEPo (triethylphosphate), TEPi (triethylphosphite), TMPo (trimethylphosphate) and TMPi (trimethylphosphite); and

illuminating the reaction volume of gas from a high intensity light source to increase the functional atomic oxygen concentration and reduce the fixed charge in the deposited films.

51. (Twice amended) A method of depositing a silicon dioxide layer on a substrate surface, comprising:

contacting the substrate surface with a reaction volume of gas comprising a SiO_2 precursor and ozone;

heating the substrate surface to a temperature of [about] at least 480°C to about 700°C; and

illuminating the reaction volume of gas from a light source comprising mercury arc vapor lamps without directly exposing the substrate surface to the light source to increase the functional atomic oxygen concentration and reduce the fixed charge in the deposited films.

52. (Twice amended) A method of depositing a doped silicon dioxide layer on a substrate surface, comprising:

contacting the substrate surface with a reaction volume of gas comprising a SiO_2 precursor, ozone and at least one dopant source;

heating the substrate surface to a temperature of [about] at least 480°C to about 700°C; and

illuminating the reaction volume of gas from a light source comprising mercury arc vapor lamps without directly exposing the substrate surface to the light source to increase the functional atomic oxygen concentration and reduce the fixed charge in the deposited films.

53. (Once amended) A method of depositing a doped silicon dioxide layer on a substrate surface, comprising:

heating the substrate surface to a temperature of at least 480°C to about 700°C;

contacting the substrate surface with a reaction volume of gas comprising a SiO_2 precursor, ozone and at least two dopant sources; and

illuminating the reaction volume of gas from a light source comprising mercury arc vapor lamps to increase the functional atomic oxygen concentration and reduce the fixed charge in the deposited films.